

REMARKS

I. History and Current Status of Claims.

Claims 1-32 were originally presented for examination before the United States Patent and Trademark Office (the "Office") with filing of a patent application on July 7, 2001. The first Office Action provides the following: objection to Claims 17 and 21 because of informalities; rejection of Claims 1, 3-7, 9, 10-12, 14 and 16 under 35 U.S.C. § 102(b) as being anticipated by Pinnock (WO 99/39169 A1); rejection of Claims 8, 13 17-19 and 22-32 under 35 U.S.C. §103(a) as being unpatentable over Pinnock in view of Burke, Jr (US 3,688,570). rejection of Claims 2 and 15 under 35 U.S.C. §103(a) as being unpatentable over Pinnock in view of Cui et al (US No. 6,115,111); and rejection of Claims 20 and 21 under 35 U.S.C. §103(a) as being unpatentable over Pinnock as modified by Burke, Jr further in view of Cui et al. In his response to the first office action, Applicant cancelled claims 2, 15 and 20 and amended claims 1, 11, 17, 19 and 22. Claims 1, 3-14, and 16-19, and 21-32 remained pending in the present application.

In the most recent Office Action, made Final, all the claims, 1, 3-7, 9-12, 14 and 16 are being rejected under 35 U.S.C. §103(a) as being unpatentable over Pinnock in view of Cui, and claims 8,13,17-19 and 21-32 are being rejected under 35 U.S.C. §103(a) as being unpatentable over Pinnock in view of Cui and Bruke. In response, Applicant amended claims 1, 3, 4, 7, 8, 11, 17, and 24 and submits the following remarks. Again, Applicant respectfully requests reconsideration of his application.

II. MPEP 2141.01 I and use of Cui as a 103 reference.

Among other distinctions with Applicant's invention, Pinnock does not teach use of a semiconductor laser for its light source. The examiner relies on the Cui reference for its teaching of vertical cavity surface emitting laser. According to MPEP 2141.01 I, Subject matter that is prior art under 35 U.S.C. 102 can be used to support a rejection under section 103. A 35 U.S.C. 103 rejection based on 35

U.S.C. 102(a), 102(b), 102(e), etc. depends on the type of prior art reference used and its publication or issue date. Obviously publication is an important consideration for any reference that will be used under 35 USC 103. According to 35 U.S.C. 102(e), a person shall be entitled to a patent unless:

.. the invention was described in – (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under article 21(2) of such treaty in the English language. . .

Accordingly, to be available prior art under 35 U.S.C. 103, it makes sense that Cui must have a publication or issue date that precedes Applicant's filing date where the only intention during examination is to utilize a single element for combination with element from other references. Unlike a strict application of 35 USC 102 where all elements must be described in a single reference, a obviousness rejection requires the hypothetical skilled in the art to have all the references that will be combined physically available to him/her at the time an Applicant's invention was filed in order for a hint or suggestion to combine elements from diverse references to materialize.

Applicant's patent application was filed on July 17, 2001. Cui's patent was issued on June 4, 2002. Cui was never published as an application before its issue date in 2002. Cui could not publish as a foreign reference prior to its June 4, 2002 issue date because it was only filed in the United States. One skilled in the art could not be inspired on July 17, 2001 to combine Pinnock with the VCSEL used by a Cui's invention to arrive at Applicant's invention. Logically, Cui could not qualify as a reference that was available to one skilled in the art for combination with Pinnock under 35 U.S.C. 103, because it wasn't publically available when the hint or suggestion to make such a combination would have to occur, July 17, 2001.

Nevertheless, Applicant has amended his claims and believes there are additional reasons besides the forgoing argument to allow his claims, as will be apparent from the following remarks.

III. Rejection of Claims 1, 3-7, 9-12, 14 and 16 as being unpatentable over Pinnock in view of Cui.

Claims 1, 3-7, 9-12, 14 and 16 currently stand rejected by the Office under 35 U.S.C. §103 as being obviated by Pinnock in view of Cui. Claims 1 and 11 have been amended to correct a misspelling of "vertical" and to provide additional language from the specification that clarifies how Applicant's invention is novel and nonobvious over the cited art.

Pinnock does not teach a method for analyzing the performance of a system that includes a step of: directing light from at least one vertical cavity surface-emitting laser (VCSEL) to an encoded portion of a rotating member. Pinnock merely utilizes a lamp, which is not conducive for use in small-scaled environments or with as much lighting efficiency as a collimated laser such as a VCSEL. By not teaching laser use, Pinnock fails to teach each and every element of the invention as provided by Applicant in independent claims 1 and 11.

The Cui reference teaches use of a vertical cavity surface emitting laser (VCSEL) as an optical rotary position encoder. Although Cui's VCSEL use was not publically known when Applicant filed his application, it is being combined with Pinnock to render the claims obvious.

Applicant has amended claims 1 and 11. Claim 1 and 11 now read as follows:

1. A method for analyzing the performance of a system, comprising the steps of:

directing light from at least one vertical cavity surface-emitting laser (VCSEL) towards identically encoded portions formed on planar surfaces formed on and located near inner surfaces of two disks independently rotatable on two shafts representing input and output mechanism of the system;

transmitting a portion of the light towards a detector from said encoded portions;

detecting a transmitted portion of the light using the detector; and

recovering information from said transmitted portion of the light, said information containing performance characteristic, data of said system including torque between the two shafts.

11. An apparatus for analyzing the performance of a system including two rotating disks independently attached to facing end of input and output shafts and a torsion bar interconnecting the input and output shafts, said apparatus comprising:

at least one directing element that directs light from a vertical cavity surface-emitting laser (VCSEL) in order to intercept an encoded portion of said disks;

at least one transmitting element associated with said encoded portion that transmits a transmitted portion of said light from said encoded portion of said rotating members; and

at least one detector that detects the transmitted portion of said light to recover performance information maintained therein, wherein said performance information includes data about torque between the input and output shafts.

Neither Pinnock or Cui teach placement of encoded portions on the inner surfaces of two rotating members (i.e., disks). A light beam from a single light source such as a laser can impinge on two encoded surfaces causing images to interact. The images are used to detect system performance such as torque between the rotating members or associated hardware. Because neither Pinnock or Cui teach the invention as now claimed by Applicant, the rejection is respectfully traversed.

Applicant has cancelled claims 5 and 6. Claims 3-4, 7, and 9-10 depend on claim 1, and claims 12, 14 and 16 depend on claim 11, respectively; therefore these claims are also believed allowable. For these reasons, the rejection of claims 1, 3-4, 7-12, 14 and 16 is traversed.

IV. Rejection of Claims 8, 13, 17-19 and 21-32 as being unpatentable over Pinnock in view of Cui et al and Burke Jr.

Claim 13 has been cancelled by Applicant. Claim 8 depends on independent claim 7 and is believed allowable based on the remarks provided above in support of claim 7.

Claims 17-19 and 21-32 currently stand rejected by the Office under 35 U.S.C. §103(a) as being unpatentable over Pinnock in view of Cui et al and Burke Jr. Independent claim 17 has been amended as follows:

17. An apparatus for detecting the relative motion between at least two rotating members in a system having a vertical cavity surface-emitting laser (VCSEL) for generating a light beam, said apparatus comprising:

a first encoded portion located on a surface of a first rotating member, said first encoded portion facing a second encoded portion located on a surface of a second rotating member, said first and second encoded portions used for the transmission of images created using said light beam; and

a detector for detecting Moirè fringes formed as a result of the interaction of the images from said first and second encoded portions of said first and second rotating members, wherein said detector is located proximate to said system.

Burke et al or Cui et al cannot be used in combination with Pinnock indicated by Examiner to obviate Applicant's invention as now claimed. Pinnock, Cui and Burke Jr combined fail to teach a system as embodied in claim 17, which include use of a vertical cavity surface emitting laser to illuminate facing surface of two independently rotating members. For these reasons, the rejection of claims 17-19 and 24-32 is traversed.



V. **Conclusion**

Applicant has responded to each and every objection and rejection of the Official Action. Applicant respectfully submits that the foregoing amendment to claims 1, 3, 4, 7, 8, 11, 17, and 24 and his remarks do not present new issues for consideration and that no new search is necessitated. Accordingly, Applicant respectfully request reconsideration and withdrawal of the objections and the rejections and request timely issuance of the present application

The Examiner is respectfully requested to contact the undersigned representative to conduct an interview in an effort to expedite prosecution in connection with the present application should there be any outstanding matters that need to be resolved.

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